

Wildfires

by William Caper

What can we do
to fight wildfires?

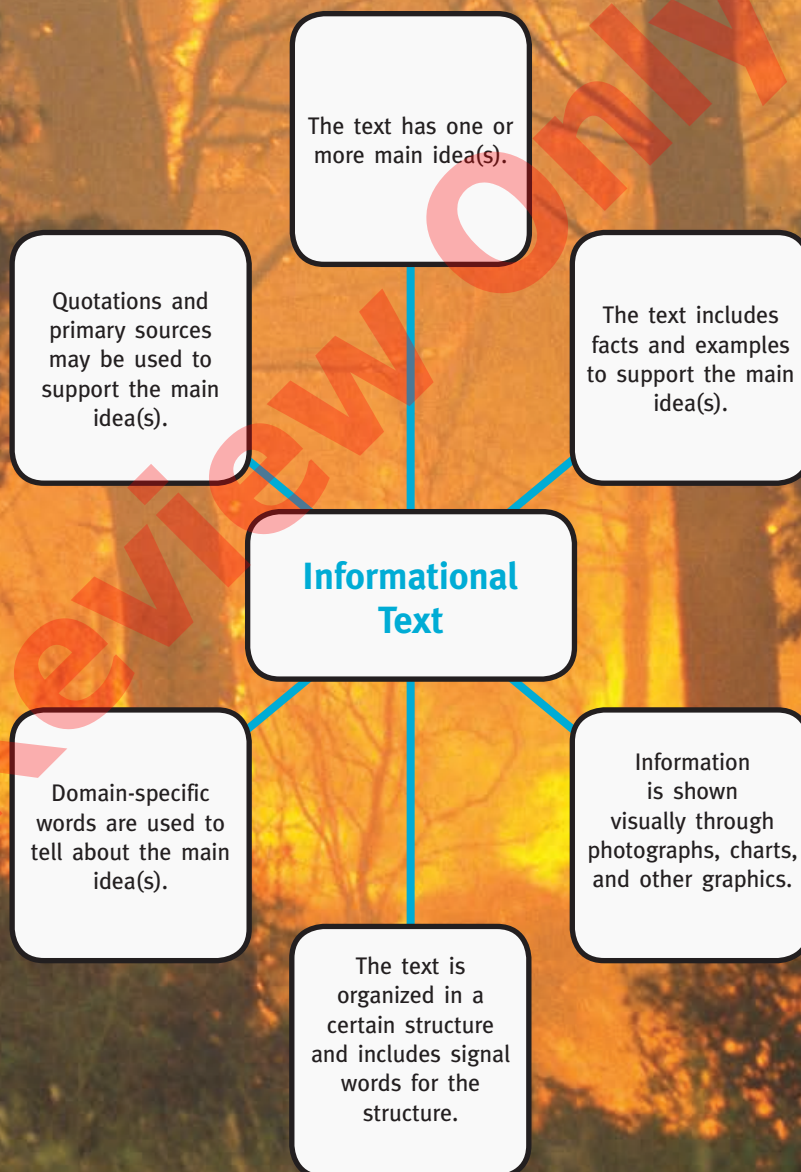
INFORMATIONAL TEXT
SCIENCE & TECHNOLOGY

Level **0/34**

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Caution: Wildfire!

Wildfires can start anywhere and at any time. They can start in the wilderness, in a park, or even in a backyard. A wildfire is a fire burning in a natural area such as a forest or grassland. Wildfires are extremely harmful to people and animals. They can also destroy homes, buildings, and communities.

But what causes wildfires?
And how can people work to prevent them?

▼ Wildfires can start in forests, prairies, grasslands, backyards, and more.



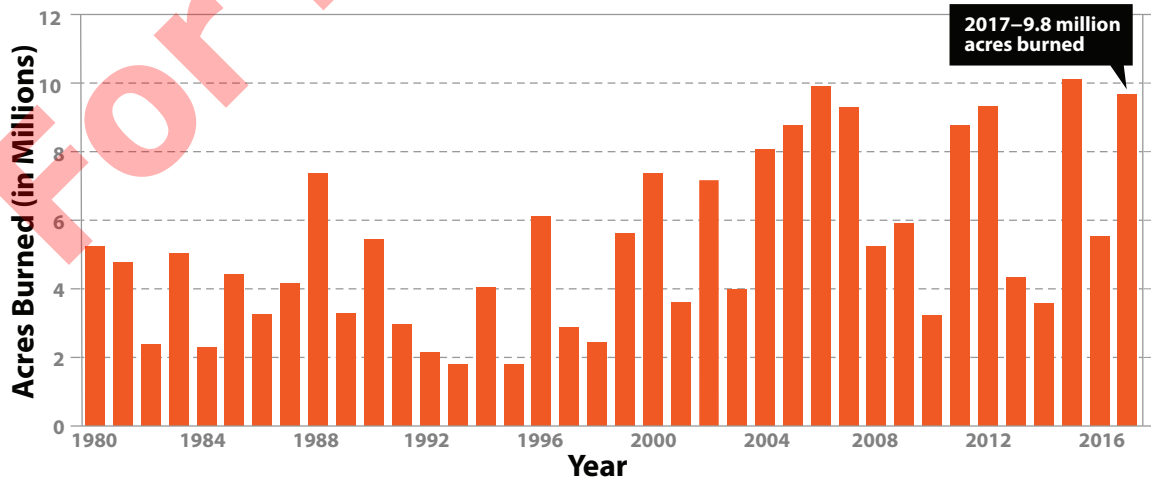


◀ A simple spark can set dried vegetation on fire.

Some regions have dry **climates**. Other regions have climates with long dry seasons. Long periods without rain can dry out crops. Weeks or months of dry weather can also dry out plants, trees, and other **vegetation**. All these **factors** can lead to dangerous wildfire conditions.

The good news is that there are many things people can do to prevent wildfires. Read this book to find out what causes dry climates. Find out what factors cause wildfires and how people can work together to fight these unique and challenging disasters.

**Number of Acres Burned by Wildfires
1980–2017**



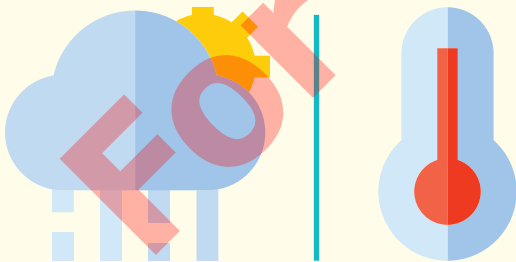
Source: National Interagency Fire Center

What Causes Different Climates?

What is the difference between a rain forest and a desert? The answer is climate. Climate is the average weather of a region over long periods of time.

Scientists measure different daily weather conditions. They measure things like rainfall and temperature over a period of many years. Then they use this information to predict the weather patterns that occur throughout the year.

WEATHER vs. CLIMATE



The atmospheric patterns of Earth's climates are based on years and years of data. Weather, on the other hand, is the daily condition of Earth's atmosphere. These conditions can change from moment to moment.

GRASSLAND



RAIN FOREST



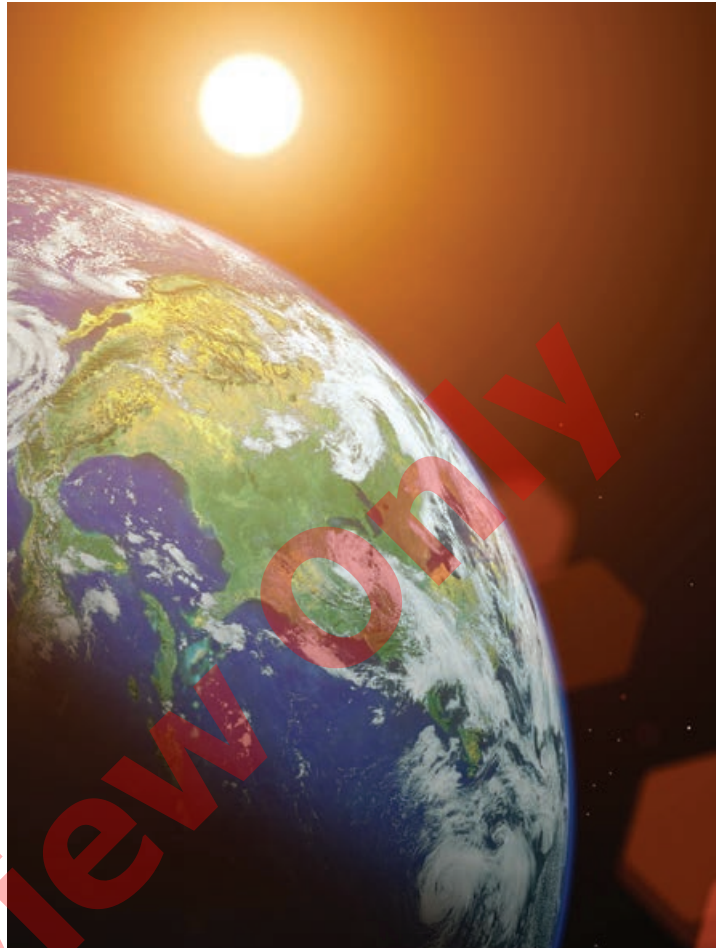
POLAR DESERT



DESERT



These patterns are caused by the sun. That is because all energy on Earth comes from the sun. Even at 150 million kilometers (93 million miles) away, the sun's energy heats Earth. This energy keeps the planet warm and supports plant and animal life. It also plays a major role in Earth's different climates.

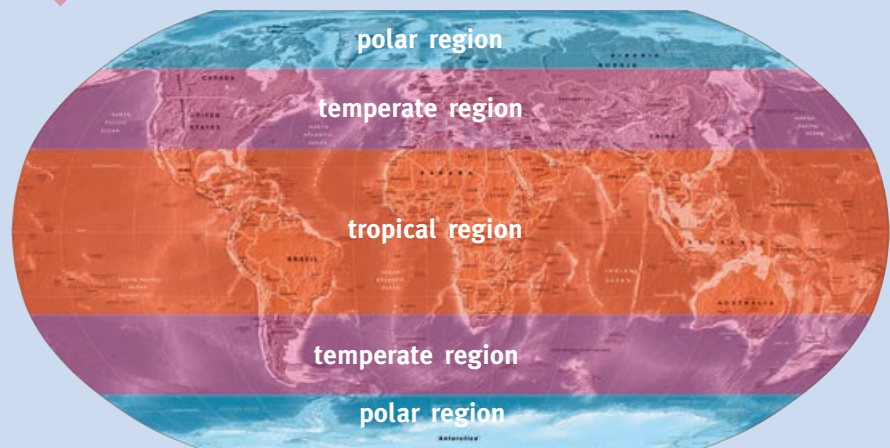


Earth's Climate Zones

The average weather in polar regions is cold and dry.

Temperate regions have mild weather, with warm summers and cool winters.

The tropical region is hot and wet almost year-round.



The Heat of the Sun

Like all stars, the sun is an enormous ball of gases. It has six distinct parts.

1. THE CORE

The center, or core, produces 99 percent of the sun's energy. It is constantly converting hydrogen gas to helium gas. It releases huge amounts of heat. The core can reach more than 15 million degrees Celsius (27 million degrees Fahrenheit).

2. THE RADIATIVE ZONE

The heat from the core takes thousands of years to move through this zone. As it moves outward, the heat drops from 15 million to around 2 million degrees Celsius (27 million to 3.6 million degrees Fahrenheit).

3. THE CONVECTIVE ZONE

Here, energy moves through convection. The hot gas rises. Then the gas cools and sinks.

4. THE PHOTOSPHERE

This zone releases energy in the form of light. It takes about eight minutes for light waves from the photosphere to reach Earth. The temperature is about 5,500 degrees Celsius (10,000 degrees Fahrenheit).

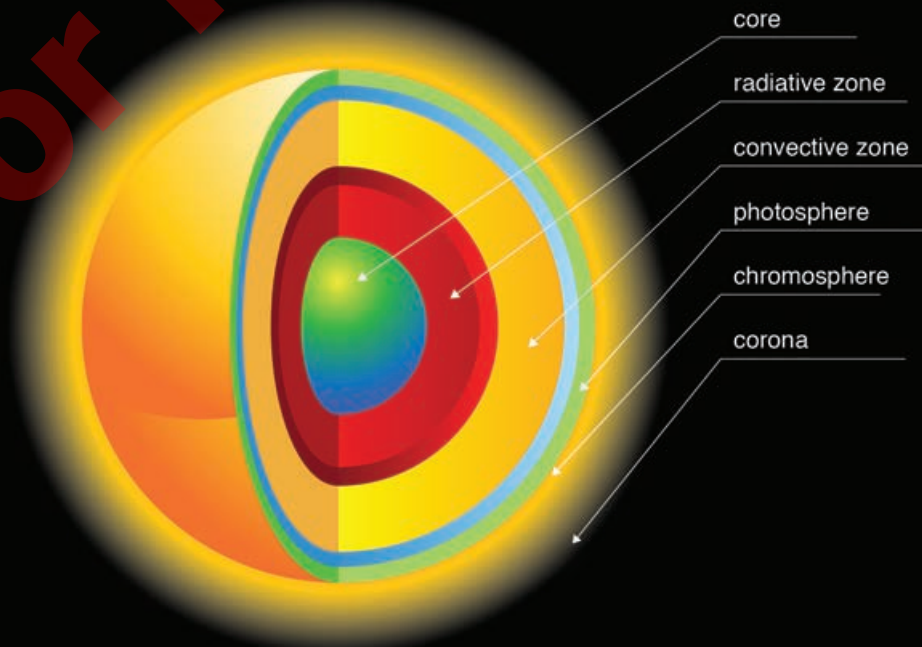
5. THE CHROMOSPHERE

Here the temperature ranges between 3,700 and 7,700 degrees Celsius (6,700 and 13,900 degrees Fahrenheit).

6. THE CORONA

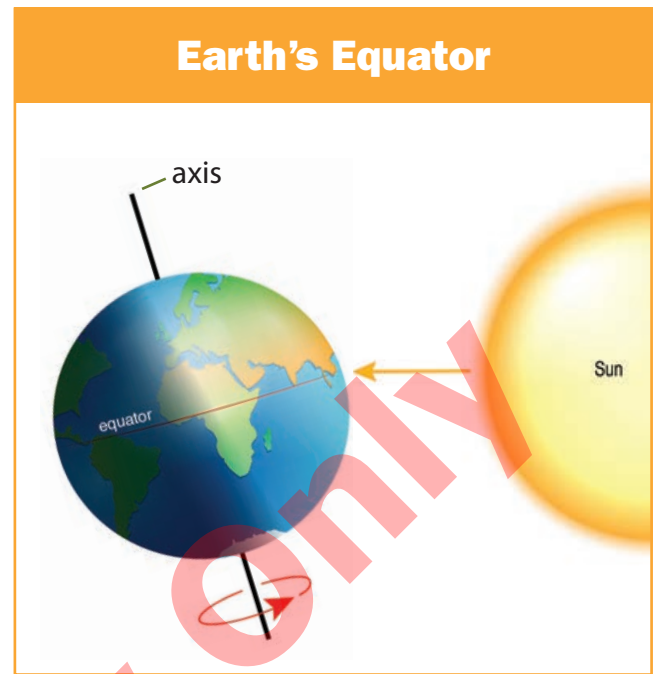
The corona spans millions of miles. Its temperature varies. Its temperature can reach up to several million degrees Celsius (and Fahrenheit).

The sun's energy travels in light waves through space. This energy warms Earth.



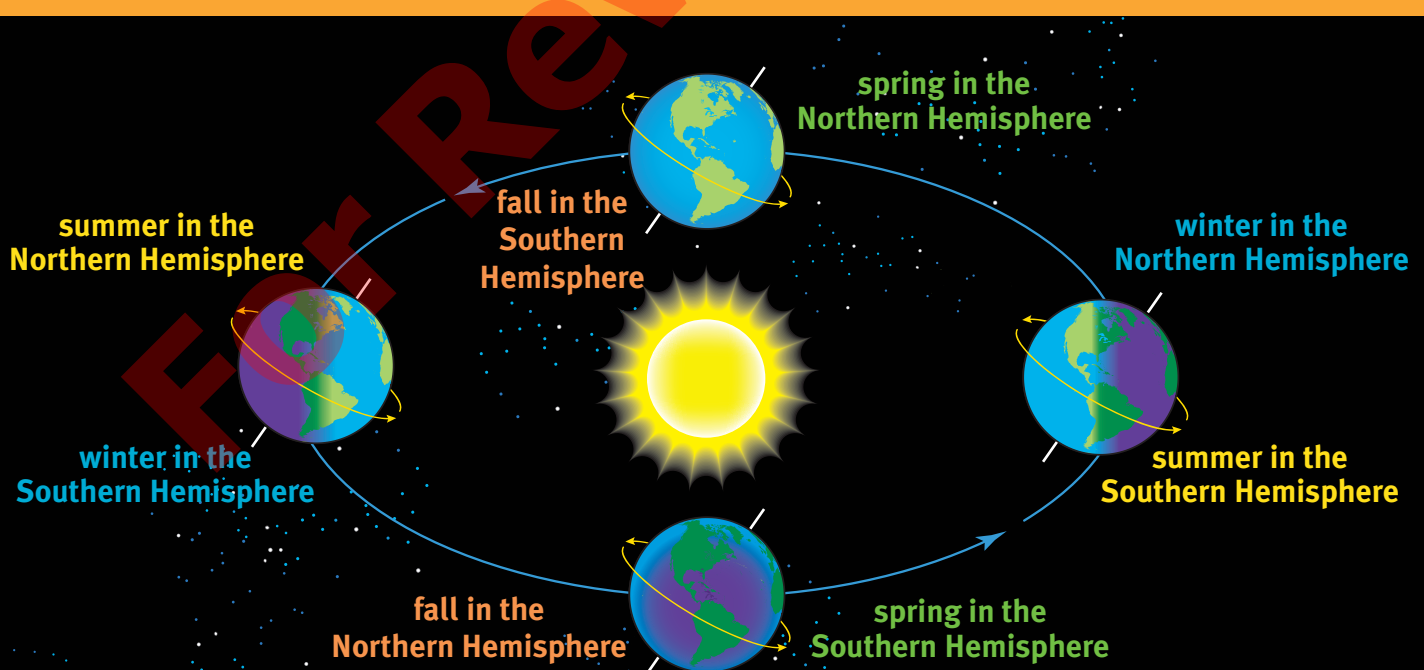
The closer a place is to the equator, the higher the air temperature. That is because Earth gets the most direct sunlight along the equator year-round.

The amount of energy Earth receives from the sun depends on the position of Earth. As Earth spins on its axis, it also orbits the sun. Earth's axis is tilted at an angle. This tilt makes one pole of Earth lean toward the sun while the other pole is tilted away. This causes the different seasons on Earth.



▲ Earth gets the most direct sunlight along the equator—an invisible circle around the planet.

Earth's Seasons



The seasons depend on Earth's position during its yearlong orbit.

The **topography** of a region affects its climate. Mountains, valleys, and other land features affect the land's temperature, air temperature, and air moisture levels. For example, air temperature drops by almost 1 degree Celsius (34 degrees Fahrenheit) for every 100 meters (330 feet) above sea level. This means a mountain region tends to be colder than a place at sea level.

Climate also depends on how close a region is to an ocean, lake, or river. For example, the climate of Arizona is mostly hot and dry. This is, in part, because Arizona is a landlocked state.

On the other hand, coastal states such as Florida tend to be hot and humid. The ocean water evaporates constantly. This keeps the air moist.

However, even coastal regions can experience long dry seasons. The mountains in California prevent rain from moving inland from the coast. That gives some areas in southeastern California an arid or desert climate.



- ▲ Landlocked regions tend to have very dry climates.



- ▲ Regions near bodies of water tend to have greater air moisture and greater annual rainfall.



- ▲ Some regions have dry seasons because of land features and wind currents.

Wind and ocean currents also affect climates. The air in Earth's atmosphere is hotter at the equator. This warm air from the equator rises. It moves toward the poles. Meanwhile, cold air from the poles sinks. It moves toward the equator. This moving air forms the winds that blow around the planet. As Earth spins on its axis, these winds move diagonally across the globe.

The same temperature differences that cause wind currents also cause ocean currents. Ocean currents cycle warm water away from the equator, and cold water toward it. These wind and ocean currents play a role in the climate of different regions.

